

WHAT IS CLAIMED IS:

1. A method comprising:

patterning a substrate with a substantially arbitrary arrangement of features by introducing irregularity into a repeating array of features.

5 2. The method of claim 1, wherein introducing irregularity comprises forming an arbitrary figure above some of the features in the repeating array.

3. The method of claim 2, wherein patterning the substrate further comprises etching a substrate through portions of
10 the repeating array not covered by the arbitrary figure.

4. The method of claim 1, wherein introducing irregularity comprises introducing irregularity into the repetition of features resulting from an interference pattern.

5. The method of claim 4, wherein introducing irregularity
15 comprises introducing irregularity into the repetition of the interference pattern formed by interference lithography.

6. The method of claim 4, wherein introducing irregularity comprises introducing irregularity into the repetition of
20 the interference pattern formed by projection lithography.

7. The method of claim 1, wherein introducing irregularity comprises introducing irregularity into the repetition of a two-dimensional array of contacts.

8. The method of claim 1, wherein patterning the substrate further comprises etching the substrate using the substantially arbitrary arrangement to direct the etching.

9. The method of claim 1, wherein patterning the substrate further comprises patterning the substrate with the substantially arbitrary arrangement having a pitch approaching one half the wavelength of a patterning electromagnetic radiation.

10. A device, comprising:

a substantially arbitrary arrangement of features, the features defined with a definition characteristic of interference lithography.

11. The device of claim 10, wherein the substantially arbitrary arrangement of features comprises features printed with a pitch approaching one half the wavelength of a patterning electromagnetic radiation.

12. The device of claim 10, wherein the substantially arbitrary arrangement of features comprises features free

from defects arising due to one or more of lens
imperfections and mask imperfections.

13. The device of claim 10, wherein the substantially
arbitrary arrangement of features comprises features free
5 from defects arising due to backscatter of electrons.

14. The device of claim 10, wherein the substantially
arbitrary arrangement of features comprises a portion of a
microelectronic device.

15. The device of claim 14, wherein the portion of the
10 microelectronic device comprises a portion of an SRAM
memory device.

16. A system comprising:

a data processor;

an SRAM in data communication with the data processor,

15 the SRAM including a substantially arbitrary arrangement
of features, the features including definition
characteristic of interference lithography.

17. The system of claim 16, wherein the SRAM comprises a
substantially arbitrary arrangement of contacts including
20 definition characteristic of interference lithography.

18. A method comprising:

interfering electromagnetic radiation to illuminate a
substrate with an interference pattern, the interference
pattern imparting the substrate with repeating first
5 features; and

introducing irregularity into the repetition of the
interference pattern to impart a substantially arbitrary
feature arrangement to the substrate.

19. The method of claim 18, wherein introducing irregularity
10 comprises forming a substantially arbitrary figure above
some portion of the interference pattern.

20. The method of claim 19, further comprises patterning the
substrate using the substantially arbitrary figure to
define the substantially arbitrary feature arrangement.

15 21. The method of claim 18, wherein interfering
electromagnetic radiation comprises imparting, to the
substrate, first features having a pitch approaching one
half the wavelength of a patterning electromagnetic
radiation.

20 22. The method of claim 18, wherein interfering
electromagnetic radiation comprises using interference

lithography to illuminate the substrate with the
interference pattern.

23. A method comprising:

patterning a substrate using a first lithographic
5 technique, the patterning providing first features with a
first pitch approaching one half the wavelength of a
patterning electromagnetic radiation; and

eliminating the impact of at least some of the first
features on the substrate using a second lithographic
10 technique providing second features with a second pitch,
the second pitch being two or more times larger than the
first pitch.

24. The method of claim 23, wherein patterning the substrate
using the first lithographic technique comprises

15 patterning the substrate using interference lithography.

25. The method of claim 24, wherein patterning the substrate
using interference lithography comprises exposing the
substrate with a pair of interference patterns.

26. The method of claim 25, wherein exposing the substrate
20 comprises exposing the substrate with a substantially
identical pair of interference patterns.

27. The method of claim 25, wherein exposing the substrate comprises exposing the substrate with the pair of interference patterns simultaneously.

28. The method of claim 23, wherein eliminating the impact of
5 at least some of the first features on the substrate comprises patterning using a binary mask.

29. The method of claim 23, wherein eliminating the impact of at least some of the first features on the substrate comprises printing an arbitrary figure above some of the
10 first features.

30. The method of claim 29, wherein eliminating the impact of at least some of the first features on the substrate further comprises etching a portion of the substrate through the first features not covered by the arbitrary
15 figure.

31. An apparatus comprising:

an interference exposure module to produce a first exposure resulting in an array of repeating contacts in a photosensitive media; and

20 a second patterning module to reduce regularity of the features in the array.

32. The apparatus of claim 31, wherein the interference exposure module comprises:

a pyramidal beam splitter to split an electromagnetic radiation four ways; and

5 two sets of opposing pairs of mirrors disposed to create an interference pattern by reflecting the split electromagnetic radiation.